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THE BRITISH FLOODS OF JULY, 1875.

ACCORDING to all precedent we ought to write for this number an entirely original article descriptive of the effects of the late floods; but we do not always obey precedents, and we think that it is waste of time, and bad policy, when facts have been once well arranged and expressed to re-dress them in other language simply in order to obtain an appearance of originality. The present article will therefore consist of—

1. General description of the floods (reprinted from the *Daily News* of July 23rd).
2. Short statements of actual damage.
3. Rainfall statistics.
4. Remarks on the whole matter.

"The disastrous weather which has made the present July one of the wettest on record seems still to linger over the whole country between the Scottish border and the Channel. It is clear to the north of us, and fine to the south of us, but the whole of England and the south of Ireland seem to lie under a belt of storms. The news from various parts of England which we publish to-day (23rd) is of the same tenor as that of former days. A wet morning and evening in London, with fine weather between, was typical of what the day was all over the land. In the Eastern Counties the sky was brighter, and in the Midland district the rain had ceased; but there were tremendous thunderstorms and deluges of rain at Bath and in North Wales. Last week the downfall was universal, though the main force of the almost tropical floods was felt in the west; this week the weather has been a little more chequered, though floods of almost equal violence have come down on the Midland Counties. On Sunday (18th), when we were rejoicing in a day's sunshine in London, a great thunderstorm was raging in Lincolnshire, and over the whole district from Sheffield to Birmingham, and the first five days of the week have each been distinguished by its separate deluge in various parts of the country. On Monday (19th) there were severe thunderstorms at Newcastle, extending as far north as the central districts of Scotland. That day and Tuesday (20th) were wet over the greater part of the Midland and Northern Counties. On Tuesday the Eastern Counties were deluged, and the rain fell in torrents all over Leicestershire and Warwickshire. At Birmingham the downpour, which began at noon on that day, lasted twenty hours, and was succeeded on Wednesday evening (21st) by another violent thunderstorm. At the same time the valley of the Kennet from Hungerford to Reading was subject to a similar visitation, and the heavy rain extended to Windsor, while another rainstorm deluged the country from Bedford to Leicester. Yesterday (22nd), as we have already said, the deluge came down at Bath and in the district round that city. In this way nearly the whole of the island seems to be visited in turn, not only with the

storms to which we are accustomed in July, and which make it one of the wettest months in the year, but with a long series of hours of heavy rain, with thunder and lightning here and there, but usually, as in London, with rains of autumnal persistency rather than the suddenness of summer showers. Meanwhile it may be noted that some parts of the country have to a large extent escaped. The Liverpool papers speak of the comparative immunity of their district from the overwhelming torrents which have fallen elsewhere. The north of Ireland has been almost untouched by the storms; and during the present week the weather is reported as on the whole finer in the extreme west of England, and along the southern coast. The atmostpheric disturbances which produce the heavy precipitation shift about; but wherever the rain falls it has the same characteristics of unusual persistency and unparalleled quantity.

"It is no wonder that our natural drainage systems should fail to carry off this remarkable rainfall. It is difficult to form any idea of what is really meant by an inch or two inches of rain coming down over an immense drainage area. Such a quantity deposited on the slopes of the Pyrenees, either in melting snow or rain, rolls down their sides and gathers in a river channel like that of the Garonne, and rolling along towards the sea must carry everything before it. We have had the same thing on a smaller scale in Wales and Monmouthshire last week, and have it all over central England at the present moment. Wherever there is high ground on the watershed the river below has been seriously swollen. The hills of Charnwood Forest have sent down floods which have deluged Leicester, and the hills of Derbyshire and Staffordshire have sent down water enough to inundate the whole valley of the Trent. The Thames rises more slowly than other English rivers, but many of its affluents, such as the Loddon and the Kennet, are flowing over the meadows which border them, and even the Thames itself is in many places over its banks. Smaller streams, such as the Leam at Leamington, the Rea at Birmingham, the Tame which gives its name to Tamworth, the Avon at Rugby, and the Dearne in South Yorkshire, have been swollen into torrents. Indeed the harvest landscapes would have presented a strange aspect to any who could have got a bird's-eye view of them yesterday (22nd). Along all the level lands the meadows were swamped, and almost every river valley would present the appearance of a lake. In the fens of Cambridgeshire and Northamptonshire the water is said to cover the country for miles; the valley of the Nene, near Peterborough, is flooded; the Welland and the Witham have deluged the villages along their course, and from inland Leicester the Soar is reported to have made the country "like a sea." The sluggish Ouse naturally covered the level lands with its waters, and though hundreds of acres of well-cropped fields are inundated, it was reported as still rising last night (22nd) at Bedford Bridge; even as high up in its course as Buckingham it is reported as flooded. Everywhere in fact, from Evesham in the west to Wisbeach and Lynn in the east, and from the Kennet valley to the Ribble at Preston, the summer landscape is the prey to winter floods.

"It is impossible to make any estimate of the damage which this visitation of water has caused. Even the injury to houses, factories, roads, railways, and bridges is immense, for news of damage of this kind comes from all quarters, and seems everywhere, probably from the suddenness of the floods, to be of a more serious character than usual. The most melancholy aspect of the whole is, however, the relation of the weather to the crops. We have had hitherto a singularly favourable year. May brought no nipping frosts, but was cold enough to keep back vegetation, and the season was late, itself a proverbial pledge of fruitfulness. The dripping June also verified the jingling proverb which credits it with bringing all things into tune. Even the grass crop promised well, the wheat was good, the barley unusually heavy, the oats were plentiful, the root crops prosperous, and it was a good year for nearly every kind of fruit. The deluge in July has disappointed nearly all the hopes based on this happy condition of the fields. Some hay was got in early in the month, but when St. Swithin brought his forty-eight hours of incessant rain, a good part of the crop was still lying in swathes on the meadows or standing uncut. Over thousands of acres, the cut grass is now floating on the surface of the water which has covered the meadows, and

large quantities have been borne away. The damage to the hay harvest is beyond all possibility of recovery, and will probably transform a year which promised to be one of plenty into one of scarcity. Of the other crops it is as yet premature to speak. Our Norwich Correspondent, in reporting that last night the sky had been clearer in the Eastern Counties, says that the aspect of the country is better than could have been anticipated. The wheat is knocked about to some extent, but has generally borne the heavy rains pretty well; the barley, which in many parts of the country was the best and most promising of all the crops, has suffered more, and everywhere the cereals are kept back by the want of warmth and sun. The cornfields should by this time be turning yellow in the sunshine; but they are still of a dark green, and where the colour has begun to change they show the effects of the wet. Still the harvest is probably not very seriously damaged, and the general tenor of the reports from the agricultural counties is that, except in the river valleys, little damage has been done which the speedy return of sunshine might not repair. As to the hope of any such return we do not venture to prophesy. We may, however, point out as perhaps a hopeful feature that during the bad weather of this week and last the sky has usually been reported as clear on the coast of Norway and in the north of Scotland; while the weather also seems to have changed for the better all over those parts of France which were first visited by the floods. Local damage excepted, a dry August would probably leave the agricultural interest in general but little the worse for the bad weather of July, as the splendid root crops would probably compensate for much of the injury done to the cereals; and even an autumnal hay crop might be possible. It is at any rate premature at present to speculate on a winter of dear bread, when there is time even yet for the long-delayed summer to come and make the autumn fruitful."

Examination of the following pages will show that we have compressed the statements of damage as much as possible, and it has been no slight task to do so; it would have been much easier to have filled 50 or 60 pages than it has been to condense the record into one-tenth of that space. However, it is done, and though it would be expecting too much did we anticipate that no errors will be found in it, we believe that they will be very few. It will be seen that the record is divided into two portions, in order to separate the primary Monmouthshire rains, from the subsequent ones.

NOTES ON THE FLOOD OF JULY 15TH.

III. *Banbury.*—The Cherwell in flood; hay suffered severely.

III. *Northampton.*—The Nene over its banks; great quantities of hay spoilt.

IV. *Ipswich.*—Wheat and barley in many fields lying level with the earth, and quite soddened; low grounds flooded.

V. *Dorchester.*—Low-lying lands flooded, but not much permanent injury.

V. *Plympton.*—The little Larey overflowed and flooded some adjacent marsh land, but did no serious damage.

V. *Bath.*—The Avon rose rapidly on 15th to 10 ft. above its usual summer level, overflowing its banks in many places, and carrying away hay. Several low-lying houses inundated, and two thoroughfares for a time impassable. Much meadow land under water, and the grain crops badly laid. A girl fell into the river, and it was running so fast that no one could save her.

V. *Yeovil.*—Deep floods in Mid-Somerset; moorlands under water, and much hay washed away.

V. *Frome.*—The river overflowed; the principal entrances to the town were up to noon (16th?) impassable for pedestrians, and the water reached the floors of the market carts; several shops were closed, the water being 2 ft. deep.

VI. *Bristol.*—The low-lying poor district of Baptist Mills was several feet under water, the ground floors were uninhabitable, and people went in boats to deliver bread to the people in the upper rooms.

VI. *Cinderford.*—Hay crop nearly all destroyed in this neighbourhood, and a few animals and fowls washed away. The great cause of destruction was, however, the sudden discharge of the contents of a reservoir nearly 20 acres in extent through the bursting of a dam across the Blakeney brook, which, though happily causing no loss of human life (except one indirectly), destroyed nearly all that was in its course, and flooded the little town of Blakeney, Walmer's colliery, and the Silly Point Iron mine. The Whimsey railway was much damaged. For several miles along the valley of the Severn the land was submerged, not even the tops of the hedges being visible.

VI. *Hereford.*—The Wye rose to 11 ft. by the morning of the 15th, and to 14 ft. by the evening, thereby approaching the height of the great flood of 1852. Many sheep and lambs, a horse and a donkey were brought down, and also timber, hurdles, hay, &c. The Lugg overflowed its banks near Mordiford, and it was found necessary to launch boats upon the highway between Mordiford and Hampton Bishop. The Dore overflowed at Dorstone, and some of the cottages had 1 ft. of water in the ground floors. Near Letton much land was under water, and the road from Willersley to Letton was impassable for many hours.

VI. *Leominster.*—The Arrow much flooded; a bridge over the railway from Leominster to Kington was undermined and partially gave way, so that trains could not pass it.

VI. *Worcester.*—The river rose very rapidly, the meadows on each side of it from hence to Gloucester were under water; much hay was carried away and grass spoiled. There was a heavy spate down the Teme, which overflowed its banks, as did also the Avon between Evesham and Tewkesbury.

VI. *Stafford.*—From four miles north of Stafford to Tring many thousand acres of ground were under water, and the greater part of the hay was spoiled.

VII. *Leicester.*—Floods have been general in the low-lying parts of this county, especially near Aylestone, Blaby, and Narborough. In some fields waggons might be seen immersed to their axles in water, and surrounded by floating hay.

VII. *Nottingham.*—The Trent rose higher than it has done in summer for many years, and overflowed its banks in some places, but no serious damage was reported.

XI. *Newport.*—Several bridges washed away at Pontheor and other

places. The railway traffic on the Eastern and Western Railways of the Monmouthshire Company, and on the local lines of the Great Western Railway has been interrupted, and in some cases suspended, while miles of turnpike road and thousands of acres of land are deeply covered with water. In the western valleys scores of cottages are rendered uninhabitable and the inmates have left, leaving everything behind them, and thankful to escape with life. At Pontymisti, Risca, and villages higher up, the same desolation prevails. The greatest amount of damage in this valley is in the neighbourhood of Abercarne, where the vale is narrow, and the waters are penned in. Here springs have burst forth from the mountain side, carrying in their progress masses of débris, and obstructing road, river, and rail, which all run nearly parallel through the narrow defiles. Opposite Risca Station two immense patches have been scoured away from the mountain side. At Cross Keys two separate torrents came down upon the line, and taxed all the energies of a gang of men to prevent the rails and sleepers being carried away. Here the railway crosses a low wooden bridge, the main support of which was swept off, and stranded a quarter of a mile lower down. Above Abercarne a portion of the line was deranged, and an engine with trucks laden with balks went up the line to replace the damage. In passing under Mynyddislwyn Mountain a landslip fell upon the train, and carried the trucks into the wood below, completely covering them up. At the end of the trucks were the brake vans, filled with labourers. These were dragged a few yards down the line, and turned over. Fortunately the labourers escaped unhurt, but had they been in the centre of the train, probably not a man would have escaped with life. The coupling chain snapped, and the engine did not leave the line. In the Eastern valleys a slip took place at the Vartey, which stopped the trains between Blaenavon and Pontypool. Numerous small bridges have been swept away, but as yet no loss of life is reported. The new line of the Great Western between Caerleon and Pontnewydd is much damaged in places.

XI. *Chepstow.*—Unprecedented floods; garden produce washed out of the soil, lower parts of houses flooded, and furniture swimming about.

XI. *Pontypool.*—Tremendous floods; the gas works under water, and the furnace fires extinguished. Pontnewydd turnpike under water.

XI. *Monmouth.*—There was considerable agricultural loss in this county, all the low-lying valleys being under water; but it was dwarfed by the bursting of a reservoir, known as Roger's Pond, in the Ebbw valley near Cwm Carn, the waters of which subsequently breached the Monmouthshire Canal, thereby adding to their own volume the contents of that section of the canal. Considering the large volume of water thus liberated, we think that the mortality has been singularly small, being limited to the occupants of two houses, which, standing in the valley below the reservoir bank, were swept away by the first rush of the water.

XI. *Usk* very much flooded, at Caerleon a railway bridge was

reported to be much damaged, and traffic was suspended between Newport and Pontnewydd.

XI. *Cardiff.*—The rivers Taff and Ely overflowed their banks in many places; the damage to hay was immense; one farmer estimates his loss at £500. Flocks of sheep have been washed down both rivers, and also horses and a large number of pigs. At St. Fagans the railway was more than 2 ft. under water, near Canton Common, at Grangetown, and in the village of Ely many houses had the water 4 or 5 ft. deep, so that the inhabitants could only be visited or removed in boats. The turnpike road between Cardiff and St. Nicholas was impassable for one whole day.

XI. *Tongwynglais.*—The Taff rose to a great height; the Pentyrch works were flooded, and at Nangarw there was 6 ft. of water over the turnpike road.

Bridgend.—The Ogmore overflowed its banks, a boy was washed away, and much cattle and farm produce was destroyed.

XI. *Pontardulais.*—Floods much out in this neighbourhood; railway traffic stopped between Pontardulais and Pantyffynon, and also between the latter station and Brynaman.

NOTES ON THE SUBSEQUENT FLOODS.

II. *Windsor*, 20th.—Heavy rain and many brooks overflowing.

Newbury.—Very heavy thunderstorm between 6 and 7 p.m. on 21st, meadows on the side of the Kennet under water.

III. *Oxford*, 20th.—The floods are now over the towing path in many places, and Port Meadow is nearly covered.

Banbury, 22nd.—Great floods; scarcely anything but water between here and Oxford. Traffic stopped on East and West Junction Railway.

Brackley.—The lower part of Syresham is so flooded that communication between one part of the village and another is stopped.

Northampton.—Fields adjoining rivers, canals, and brooks, were entirely submerged, while in many instances the water ran over the roads; hay and grain crops considerably damaged; much injury done to a tan yard by the pits being filled with rain water, and the liquor spoilt, an engine was set to work to pump out the water, but its furnace was gradually put out and rendered useless. Most mills, breweries, foundries, &c., had to stop work on account of the flood, the engine fires being in many cases extinguished.

Northampton.—Such a flood as visited us is only just within the ken of the oldest inhabitant, and indeed only on record thrice in 250 years, viz.:—On the 2nd July, 1622, when the flood was so high that people in the S. and W. parts of the town had to be carried about in boats; on the 6th of May, 1663, when the water came as high as St. John's Hospital, forcing away two of the arches of the South Bridge; and at Christmas, 1821, when the water washed away the foundations, &c., of several houses and buildings at the lower end of the town. Many of the inhabitants, remembering the floods in 1849 and 1872, had prepared for the recent one by stopping up likely places for its

entrance, or removing their property either to buildings standing higher, or to the upper parts of their houses.

Higham Ferrers.—On Wednesday Higham was converted into an island, being completely surrounded with water, but no striking damage has been done except to the hay crops.

Ravensthorpe.—Very heavy rain on Sunday, from 5 to 6.15 p.m. 1·14 in.; in previous 24 hours, measured 9 a.m. of the 21st, 1·965.

West Haddon.—Streets and houses flooded on Sunday, and were not in a much better state by Wednesday.

Yelvertoft.—On the Rugby and Stamford railway a cottage was washed away, and also about 150 yards of the railway embankment.

Brigstock, July 18th.—Terrific thunderstorm, the rain flooding the houses as it fell, not by swelling the streams but by itself; yet at Lyvedon, about 3 miles from Brigstock, there was not sufficient rain to lay the dust. They had rain again on Monday and Tuesday, and on Wednesday the water was rising.

Thrapston.—Several heavy coal barges have been washed from the river, and are now drifting about in the fields.

Burton Latimer.—A man endeavouring to save some sheep was carried away and drowned.

Raunds.—A culvert made last year at £170 expense burst in several places, and helped to deluge the town. Mr. Nichol's employed several wagons to fetch in his sheep, or they would all have been drowned.

Stamford and Peterborough.—Traffic has been stopped between these places.

Northamptonshire.—The Fens totally submerged for miles; many acres of grain on low lying land under water, and crops on higher lands beaten down by the rain. For more than a week we have had an incessant downpour, and the rain continued to fall with no appearance of clearing up until 22nd. The river Nene, which overflowed its banks two or three days ago, still continued to rise rapidly on Thursday.

Kimbolton, 21st.—Traffic hence to Huntingdon suspended.

Huntingdon, 20th.—The day of the races, but the course was entirely under water.

St. Ives, 21st.—Many houses surrounded by water, and communication only possible by boats.

Earith.—The Ouse has overflowed its banks, and the land is covered with water 3 feet deep.

Somersham.—The embankment of the Great Eastern Railway damaged during the night of 20th.

Bedford, 21st.—Ouse higher than it has been for eleven years, and still rising rapidly; scores of acres by its banks flooded.

Cambridge.—Cam swollen to a great degree, and water running at the backs of the colleges with great velocity.

Waterbeach.—Fields submerged, and hay crops throughout the greater portion of the Fens destroyed.

Swavesey, 21st.—Railway traffic hence to St. Ives stopped.

IV. *Ipswich.*— Large amount of hay spoilt or injured; grain crops much beaten down, so as seriously to affect both the yield and quality.

VI. *Ewias Harold.*—Very heavy storm of rain about 6.30 a.m. on the 20th. About eight o'clock the brook Dulas overflowed, and the village was flooded for a little while, but no serious damage was done.

Ludlow.—The heavy rains of last week overflowed the banks of the Teme and its tributaries in this district, inundating the low-lying fields adjacent, and doing considerable damage to crops.

Tamworth.—The rivers Tame and Anker overflowed, and covered the land for miles round; the bank of the Birmingham canal burst at Fasley at 4 a.m. on 21st.—One of the principal streets had 4 ft. deep of water for a length of 120 yards; two paper mills, a flour mill, and several collieries were flooded, and it was impossible to leave the town on foot except by one road.

Burton-on-Trent.—Very great flood in the Trent, many thousand acres under water. 22nd.—Flood continues, many streets impassable on foot, and the lower stories of hundreds of houses uninhabitable. Dead cattle and much hay passing down the Trent.

Evesham.—In 12 hours the river rose 6 ft.; it was on the 21st evening 9 ft. above the summer level, and still rising.

Kidderminster.—The water in Mill Street was 5 ft. deep at 11 p.m. on 21st. Great damage done; several carpet mills stopped, 20 tons of sugar spoiled at the Co-operative Stores, &c.

Leamington, 21st.—The Leam and the Avon overflowed their banks, washed away a small bridge, and flooded much adjoining land.

Rugby.—All the low-lying land by the river Avon is under water; dead cattle and large quantities of hay are continually passing down the river. The railway flooded and rendered impassable, the engine fires being put out; the damage done is enormous.

Coventry, 21st.—The little river Sherbourne rose rapidly on Tuesday night, and about 5 a.m. on the 21st overflowed its banks, flooded the adjacent lands, and washed away hay, pigs, poultry, &c. The furnace fires of several factories were extinguished.

Nuneaton.—Great flood on 21st; many streets under water, shops and hotels closed, and factory fires extinguished.

Birmingham, 21st.—4 p.m. violent thunderstorm with heavy rain and hail, producing great floods.

VII. *Lutterworth.*—Crops much spoilt; meadows adjoining the Swift are all under water.

Leicester.—Excessive floods on 21st, not only in the town, but throughout the centre of the county; railway bridge washed away at Glenfield; traffic temporarily stopped at Desford, also both E. and W. of Melton.

Glenfield.—Tremendous flood, during the night; the water in part of the village was breast high, and the women and children were conveyed to the Vicarage, Wesleyan chapel, and other buildings on the higher ground.

Barrow (Leicester.)—A man drowned by the inrush of water through the sweeping away of a wall.

Bourn.—Much ballast washed from the railway between here and Essendine, and traffic suspended.

Grantham, 21st.—Witham river has overflowed.

Nottingham.—Much land under water on 21st.

VIII. *Manchester.*—The Irwell was 5 ft. above its usual level at 5 p.m., and 12½ ft. at 11.30 p.m. on 20th. A few cellars flooded.

X. *Newcastle-on-Tyne.*—Much hay damaged by rains of 17th and 18th.

XI. *Usk.*—Hundreds of tons of hay have been carried away by the floods all down the Otway Bottom, as well as several heads of stock.

Llanelly.—The weather in this district continues very bad, and it is feared that many tons of hay will become rotten.

Erwood, near Hay.—The postman being unable to persuade the ferryman to take him across the Wye, determined to swim over, and thus reach the railway for his bags; but his daring was not successful as he was carried 2½ miles down the stream before he could get a landing. Many of the tributaries of the Wye are higher than have ever been known.

Talgarth.—The heavy rain has caused the brooks to overflow, but without damage of any considerable extent.

RAINFALL STATISTICS.

We must now give the details of the fall of rain which has caused these disasters. The table only requires explanation in two respects :—

I. The stations are arranged in the order in which they follow in *British Rainfall*, the names being abbreviated as much as possible in order to save space.

II. The fall on the 14th, and also the total fall for the month at two Monmouthshire stations is followed by a +. This mark, which it always grieves us to use, indicates that at these stations the gauges were allowed to run over, and, therefore, we only know that the fall was greater than that recorded. One, if not both, of the observers was from home, but it is very strange, and greatly to be regretted, that observers so frequently forget to look after their gauges, except at the regular hour of observation, and thus lose facts of extreme practical importance, and locally of great rarity, besides spoiling their own records. We wish that it were possible to make all observers read and obey Rule XVI. of *British Rainfall*, but it is hopeless until they will believe what we have asserted repeatedly, that there is no part of the country where, sooner or later, there will not be a fall of four inches in twenty-four hours.

DAILY RAINFALL IN ENGLAND AND WALES, JULY 13TH—21ST, 1875.

Div.	Initial of County.	Station.	13th	14th	15th	16th	17th	18th	19th	20th	21st	Total in Month.	R began on 14th at
I.	Mid. .	Riversdale	...	1·02	1·09	·09	·38	·30	...	...	·54	4·38	...
		Camden Square...	...	1·29	·93	·27	·16	·07	·03	·02	·43	4·64	11 A.
		Muswell Hill.....	...	1·38	·80	·22	·23	·06	·13	·33	·45	5·20	11½ A.
		Pinner Hill	...	1·23	·63	·07	·33	·04	·06	·18	1·08	5·06	...
II.	Kent.	Riverhead	...	1·23	1·62	·25	·13	·17	·02	...	·34	4·83	...
		Acol	...	·47	·70	·50	·07	...	·23	·28	...	4·09	...
		Forest Hill	...	·83	1·33	·32	·26	·16	·02	...	·30	4·83	11¼ A.
	Sus...	Worthing, B.R...	...	1·37	·18	·05	·24	·01	...	...	·16	2·50	10½ A.
		Swallowfield	...	1·32	1·33	·33	·15	·06	·01	...	·41	5·69	...
		Hailsham	...	·98	·22	·09	·13	·32	...	...	·11	2·71	...
	Ham..	St. Lawrence, I.W.	...	1·83	·31	·07	·35	...	...	...	·18	3·15	..
		Selborne.....	...	2·14	·73	·08	·13	...	·28	...	·51	6·46	...
		StrathfieldTurgiss	...	1·65	·84	·02	·25	·06	·02	·01	1·78	5·70	9½ A.
	Berks	Wantage	·04	1·75	·92	...	·50	·10	·05	·34	·20	4·98	8 A.
III.	Herts	Hitchin	.	·89	·32	·02	·12	·02	·65	·39	·71	6·24	...
	Bucks	Grt. Missenden...	...	1·36	1·10	·12	·15	·08	...	·19	1·62	6·33	...
		Addington.....	...	1·28	·46	...	·09	·08	·12	1·16	·27	4·72	...
	Oxf...	Magdalen Col. ...	·03	1·70	·42	...	·23	·15	·05	·67	·24	4·70	...
		Banbury, H. St..	...	1·36	·39	...	·09	·06	·11	1·56	·17	5·39	9¼ A.
	Nor...	Nort'pton, S.G.S.	..	1·07	·30	...	·04	·35	1·10	1·77	·21	7·17	...
	Beds.	Aspley Guise, O..	...	1·17	·44	·01	·07	·11	·62	1·11	·45	5·69	11 A.
		Sandy Lodge.....	...	1·17	·21	·02	·05	...	·40	1·02	·04	4·56	...
	Cam..	Cambridge, M.V.	...	1·08	·37	...	·02	·03	·68	1·31	·68	4·81	0½ P.
		Wisbeach Obs. ...	...	·86	·56	...	·08	·05	1·40	1·71	·86	7·15	2 P.
IV.	Essex	Sheering	·01	·97	·18	·07	·16	·02	·53	·16	·92	4·15	...
	Suff. .	Hadleigh	...	·82	·28	·04	·08	·01	·53	·98	·60	5·47	...
		Ipswich, B.H. ...	...	1·17	·38	·10	·04	·18	·11	·52	·47	4·42	...
		Bury S. Ed., Cul.	...	·84	·49	..	·02	...	·38	1·05	·98	5·29	...
	Nor...	Diss	...	·84	·42	·01	·02	·13	·08	·65	·68	3·73	3 P.
		Geldeston	...	·50	·35	..	·30	·38	·27	·71	·50	4·13	...
		Worstead	...	·35	·12	...	1·18	·59	·83	2·47	1·91	8·84	...
		Hillington R. ..	...	·62	·42	...	...	...	·40	2·20	1·13	6·90	4¼ P.
V.	Wilts	Pewsey	..	2·45	1·17	·03	·25	...	·19	·03	·10	6·57	...
		Marlboro' Col. ...	...	2·32	·66	...	·28	...	·58	·09	·13	5·60	...
		Compton Bassett.	·03	2·37	·34	...	·38	...	·08	·18	·03	5·63	...
	Dor...	Weymouth, O.L.	·05	2·52	·09	·03	·22	...	·17	...	·04	3·89	..
		Bridport.....	·15	2·70	·05	·01	·21	...	...	...	·09	4·10	...
		Shaftesbury	...	2·15	·45	·04	·18	...	·15	·08	·84	3·91	...
	Dev...	Ashburton, D.H.	·60	3·10	·03	...	·10	...	...	..	·06	5·11	4½ A.
		Teignmouth, B..	·55	2·49	·06	·04	·09	·01	...	...	·01	4·15	...
		Tavistock, K. H.	·69	2·83	·04	...	·12	..	...	...	·01	5·35	...
		Sidmouth, S. ...	·55	1·93	·10	...	·13	...	...	·02	·01	4·10	4 A.
		Okehampton	·20	·92	·16	·04	·15	...	...	·11	·15	3·02	...
		Torrington, L.W.	·52	1·33	·03	·06	·11	·01	...	...	...	3·50	...
		Barnstaple.....	·58	1·21	·02	·02	·21	...	...	...	·02	3·35	...
		Lynmouth...	·12	1·15	·22	·12	·17	·03	...	...	...	3·35	...
	Cor...	St. Austell, T. ..	1·12	1·16	·01	...	·07	·07	...	...	·03	3·47	...
		Bodmin, C.S.....	·86	1·36	...	...	·08	·12	·06	...	·08	3·58	...
	Som..	Taunton, Hove T.	·17	1·57	·42	...	·10	...	...	·02	·10	4·18	...
		Burnham	·30	1·60	·17	...	·33	·01	·03	·03	·15	4·69	4 A.
		Frome, M.R.....	·10	2·64	·78	·21	...	...	·27	·03	·05	6·43	...
VI.	Glo...	Clifton, S.P.....	·06	2·90	·15	...	·30	...	·13	·08	·44	5·99	6 A.

Div.	Initial of County.	Station.	13th	14th	15th	16th	17th	18th	19th	20th	21st	Total in Month.	R began on 14th at
VI.	Glo..	Berkeley	·06	2·40	·16	·01	·35	..	...	·26	·18	5·03	...
		Stroud, U.	·09	2·36	·20	...	·26	·01	...	·45	·86	5·33	...
		Frampton-o-S. SL	...	1·94	·15	·01	·26	·01	..	·27	·43	4·43	...
		Staunton	...	2·75	·18	..	·18	·01	·02	·77	·43	6·73	7¾ A.
	Here.	Ross, Rocklands..	·01	3·36	·60	...	·36	·01	...	·30	·62	7·02	...
		Longtown	·21	3·88	·82	...	·20	...	·70	...	...	7·21	6½ A.
	Shr..	Ludlow, M.S. ...	...	2·00	·42	·01	·02	·03	·08	·73	·08	4·69	8½ A.
		Shifnal, H.H. ...	...	1·24	·42	...	·06	·11	·37	1·32	·03	5·59	...
		Wem, Sansaw ...	·28	1·36	·50	...	·30	·10	·32	1·10	·02	6·74	...
	Sta..	Wolver'pton, M.R	...	1·19	·38	...	·11	·66	·45	2·79	·03	8·14	11 A.
		Tamworth	·01	1·00	·66	·02	...	·51	·54	2·40	·57	8·26	...
		Cheadle, H. H....	·01	1·38	·22	...	·02	·04	1·18	·45	·04	6·97	...
	Wor..	Tenbury, O.	·01	2·15	·92	...	·06	·05	·08	·89	·08	6·17	7½ A.
		Evesham	...	1·40	·26	...	·10	·11	·85	1·22	·23	5·02	...
VII.	Lei....	Leicester, B. V. .	...	1·07	·27	...	·02	·16	·62	2·22	·41	6·54	...
		Melton, C. R. ...	...	1 13	·50	...	·01	·19	1·28	2·30	·37	7·78	Noon.
	Lin...	Boston	...	·72	·36	...	·20	·18	·46	·56	·17	3·82	...
		Horncastle, B. ...	...	·42	·05	...	·35	·04	·35	·68	·15	3·65	...
		Louth Calce... ...	·02	·28	·01	...	1·36	·20	·71	·69	·43	5·23	...
		Ulceby, K.	·05	·16	·01	...	·96	·57	·66	·38	·16	4·38	...
	Not..	Mansfield, G. H..	·01	·76	·35	...	·28	·19	·66	·25	·41	4·28	...
VIII.	Lanc.	Liverpool, W-o-H	·09	·30	·01	...	·14	...	1·07	·39	...	4·33	...
		Broughton-in-F. .	...	...	...	...	·07	·44	·20	·21	...	3·71	...
IX.	York.	Halifax, M. O....	·04	·13	...	...	1·18	·07	·70	1·75	·05	5·73	...
		Wakefield, S.V...	·07	·16	·01	.	·77	·15	·57	·56	·22	4·08	...
		Arncliffe	·06	·04	...	..	·16	·34	·41	·08	·14	4·91	...
X.	Nor...	N. Shields, R.P..	·03	...	...	...	·48	·61	1·22	...	..	5·38	...
	Cum..	Seathwaite.....	·20	...	...	...	·52	·43	·73	...	...	5·15	...
	West.	Elterwater, W....	·06	...	...	...	·10	·42	·57	·20	...	4·32	...
XI.	Mon..	Newport, Springf.	·15	5·30	·12	...	·36	...		·07	·51	7·89	5½ A.
		,, W.W..	...	5·33	...	...	...	...	...	...	...	...	...
		Llanfrechfa, G....	·32	3·70+	·37	..	·29	.	...	·03	·52	6·84+	...
		Caerleon, L.	·07	4·64	·29	·03	·19	·01	...	·05	·50	7·68	...
		Chepstow, P.P....	·02	4·20+	·54	...	·42	...	·04	...	·55	7·53+	6 A.
		Llangibby Cas....	·04	3·65	·26	...	·35	·01	...	·05	·56	6·88	...
		Tintern Abbey ...	·08	5·31	·60	...	·22	...	·11	·31	·70	9·57	...
		Monmouth	·29	2·75	·47	...	·30	...	·20	...	...	6·03	7 A.
		Abergavenny, L..	·13	3·88	·33	...	·21	·01	...	·07	·21	6·08	...
	Glam.	Cowbridge, T.H..	·50	2·42	·75	...	·26	·05	...	·09	...	5·48	...
		,, Ash H.	·15	3·67	·19	...	·33	...	...	·02	·02	6·16	...
		Cardiff Cem.	·25	4·70	·35	...	·60	...	·01	·03	·20	8·04	...
		,, Crock. ...	·32	3·74	·20	...	·55	·01	·01	·03	·16	6·28	...
		,, Pentyrch.	·32	4·80	·30	...	·51	...	..	·02	...	7·22	..
		Swansea, S.D.L. .	·48	1·50	·03	...	·14	·01	...	. .	·01	3·82	...
		Aberdare, Tre. ...	·29	3·85	·22	...	·34	...	...	...	...	8·14	...
		,, Mardy ...	·21	3·56	·10	·14	·11	·02	·04	·03	..	6·15	...
		,, Abernant	·20	3·30	·34	·18	...	...	...	·10	·08	6·37	...
		MerthyrTydfil,TT	·22	3·00	·24	...	·20	...	·24	·11	...	5·61	...
		Ystalyfera	·90	2·00	...	...	·35	..	...	...	...	6·30	4 A.
	Car...	Carmarthen, JCA	·36	2·77	·12	...	·15	·03	...	...	..	6·40	...
	Pem..	Tenby, I. T.	1·36	3·31	·17	...	·24	·07	...	...	...	7·02	1 A.
		Haverfordwest ...	·97	2·41	·13	...	·33	·05	...	...	...	5·50	..
	Card..	Aberystwith, Gogi	·14	1·15	·02	...	...	...	...	·19	·13	4·47	...
		,, Gogerddan	·04	1·40	·01	...	·05	...	..	·19	·03	4·44	...
	Brec..	Brecknock	·39	1·00	·41	·20	...	...	·20	·21	·10	4·17	...
	Rad. .	Rhayader, Nant..	·04	3·68	·19	...	·04	·01	·03	·17	·21	7·26	8½ A.

The above table requires no praise at our hands, the observers have as usual done their work well, and they have, with their accustomed readiness, furnished the data we required.

We need only summarize the leading features, and that with the utmost brevity :—

(1.) A steady rain set in at Tenby, in Pembrokeshire, about 1 a.m. on July 14th; it was then fine at all other stations in England and Wales; hour by hour it extended E.N.E.ward, at an average rate of about 17 or 18 miles per hour, reaching Gloucester about 8 a.m., Leicester about noon, and extending to the N.E. of Norfolk by 4 p.m.

(2.) The duration of this rain was variable, but perhaps on the average about 36 hours, and during that time it was persistent and steady, rather than violent.

(3.) As the rain began at the Welsh and Devonshire stations before 9 a.m. on 14th, part of the fall was necessarily entered to the 13th, and as at the majority of stations it had not finally ceased by 9 a.m. on 15th, it is most expedient to group the three days together, and thereby eliminate differences due solely to the easterly progression of the rain. Grouping them thus, we find—

I. All stations north of Lat. 53° had less than 1 inch of rain.

II. „ „ south „ 53 „ more „ „

III. „ „ west of a line from Selsea Bill to Sheppey, thence N.W. to Shrewsbury, and then S.W. to Cardigan, had more than 2 inches (except stations in N. Devon).

IV. All stations in Monmouthshire and E. Glamorganshire, had more than 3 inches, while fourteen stations in that district had more than 4 inches, and six stations had more than 5 inches.

V. It is curious to observe the great difference on the two sides of the Lower Severn, for while the Monmouthshire stations had the enormous average of about 5 inches, the fall in Gloucestershire was not much more than half that amount.

(4.) On the 17th there were heavy rains in various parts, but no exceptionally heavy amounts, the largest yet reported being Calcethorpe, Louth, 1·36, and Moorside, Halifax, 1·18.

(5.) On the 18th there was rain in different parts, but no fall of 0·70 in.

(6.) On the 19th there were thunderstorm rains in the Midland Counties, and especially in the Fen districts; upwards of an inch was registered in the following counties: Northampton, Suffolk, Cambridge, Stafford, Leicester, Lancashire, and Northumberland.

(7). On the 20th, more than an inch of rain fell at stations within a line passing from Ipswich to Oxford, thence to Shrewsbury and past Grantham to Ipswich again. The heaviest falls were 2·40 in. at Tamworth, and 2·79 in. at Wolverhampton.

(8.) On the 21st, falls exceeding 1 inch occurred in N. Middlesex, N. Hants, S. Bucks, and N. Norfolk.

(9.) Finally we find that the Monmouthshire floods were the direct product of the rainfall described in clauses (1,) (2,) and (3) ; and that the injury in central England arose from the heavy rains of the 17th to the 20th inclusive, which, finding the ground soaked, and the streams filled by the rainfall of the 14th, were necessarily obliged to flood low-lying lands.

(10.) As to the damage, it is hardly for us to speak. The dry weather at the end of July was undoubtedly of enormous value —probably worth millions—but no amount of sunshine will restore lost lives, dead cattle, broken reservoir dams, shattered houses, hay which has been washed away or furniture and stock-in-trade which have been spoiled. Good may come out of evil, but there are many who will long remember with regret the floods of July, 1875.

We have been favoured with voluminous details and remarks on the rainfall of this extraordinary period, but at present have only room to print the following :—

To the Editor of the Meteorological Magazine.

SIR,—Knowing the interest you take in Rainfall Statistics, I beg to forward you an account of the unprecedented amount of rain that has fallen in East Anglia during the present month.

The amount that I have registered from my gauge (8 inches in diameter) during the six months ending 30th of June, was only 7·97 in. The quantity registered during the present month up to the morning of the 21st *inclusive*, amounts to the extraordinary quantity of 7·90, being just equal to the aggregate of the preceding six months. At 9 a.m. on the 21st instant, my gauge indicated 3·95 inches. I have never heard of so large an amount being registered in 24 hours in this part of England.

The rain continued with slight intermissions till this morning, when I registered 0·83, making in two consecutive days a total of 4·78 in.

Great damage has been done to the crops, and all the low-lying lands are inundated.

It is rather remarkable that during the great rainfall of the last two days, there was no thunder and lightning, and the barometer was stationary during the week at about 29·40 inches.

I am, yours truly,

W. H. COZENS-HARDY.

Letheringsett Hall, Norfolk, 22nd July, 1875.

To the Editor of the Meteorological Magazine.

SIR,—You are welcome to the enclosed measurements if you think them of use as an example of the rise of a river in a flat country like Oxfordshire in connection with the rainfall. A systematic register of other rivers might be useful. I keep also the temperatures on surface

and 3 ft. below, read each morning; but the numbers would load the enclosed table too much.—I am, yours truly,

EDWARD CHAPMAN.

Frewen Hall, Oxford, 5th August, 1875.

Measurements of River Cherwell during Floods, July, 1875.

Date.	Hour.	Rise in 1th of a foot.	Fall.	Rain measured.	REMARKS.
July 1-13	...	..	...	1·10	
14	...	...	...	1·70	Rain measured at 10 a.m. on 15th
15	3.45 p.m.	0·000	...	·42	Gauge placed in River 7 ft. 4 in.
	5.50	·100	...		above surface.
16	10 a.m.	·400	...		
	12.30 p.m.	·100	...		
	4.30	·025	..		
17	10 a.m.	·175	...	·23	
	12.30 p.m.	·050	...		
	6.30	·075	...		
18	2 p.m.	·075	...	·15	
19	10 a.m.	·150	...	·05	Water fell ·05 at 5 o'clock.
20	10 ,,	·000	..	·67	Water rose ·05 at 2.30 p.m.
21	10 ,,	·275	...	·24	
	2 p.m.	·025	...		
22	12 noon	·350	...		
23	10 a.m.	·600	...	·01	
	3 p.m.	·500	...		
	5 ,,	·150	...		
	8 ,,	·150	...	...	Total rise from July 15th, 3ft. 2in
24	10 a.m.	...	·100	·02	
	2 p.m.	...	·050		
	7 ,,	...	·100		
25	10 a.m.	...	·250	·11	
	4 p.m.	...	·075		
26	10 a.m.	..	·175		
	5 p.m.	..	·100		
27	10 a.m.	...	·250		
	6 p.m.	...	·100		
28	10 a.m.	...	·200		
	8 p.m.	...	·200		
29	10 a.m.	...	·150		
30	10 ,,	...	·300		
	5 p.m.	...	·150		
31	10 a.m.	...	·200		
			2·400		
				4·70	Total Rain for Month.

The flood was about as high as an average winter flood.

To the Editor of the Meteorological Magazine.

SIR,—I hasten to send you particulars of the fearful rainfall of yesterday (July 20th), which, commencing at 4 p.m. lasted until 3 a.m. in the morning, and which reached the enormous quantity of 2·40 inches; the result is most disastrous in this district. The rivers Tame and Anker, already in a state of flood from the previous rains,

are now higher than they have been since the flood of October, 1852. An immense area of grass land is under water, and the cornfields, in many cases, are in the same miserable condition. The banks of the Coventry Canal, at Hazeley, about a mile south of here, burst early this morning, and a huge volume of water was discharged, but without doing any serious damage; it is now being repaired. I enclose you statements of the rainfall of the last 24 days, which is quite unprecedented, as far as I know.

The lower streets of the town of Tamworth are under water.

I am, dear Sir, yours very truly,

WILLIAM ARNOLD.

Lichfield Street, Tamworth, 21st July, 1875.

RAINFALL AT TAMWORTH, STAFFORDSHIRE.

From June 27th, to July 20th, 1875.

June	27th	0·49	July	10th	0·16
,,	28th	—	,,	11th	0·35
,,	29th	1·00	,,	12th	—
,,	30th	0·39	,,	13th	0·01
July	1st	—	,,	14th	1·00
,,	2nd	0·40	,,	15th	0·66
,,	3rd	0·47	,,	16th	0·02
,,	4th	—	,,	17th	—
,,	5th	—	,,	18th	0·51
,,	6th	—	,,	19th	0·54
,,	7th	—	,,	20th	2·40
,,	8th	0·06			----
,,	9th	0·57			9·03

Average Rainfall of the Year, 24·00.

REMARKABLE SHOWER OF HAY.

To the Editor of the Meteorological Magazine.

SIR,—You may care to insert in the *Meteorological Magazine* the enclosed cutting from the *Dublin Daily Express*, of Wednesday, July 28th. The fall of grass or hay was observed at Dean's Grange, Monkstown, more than a mile south of the place where Dr. Benson noticed it. My rainfall for July has been 2·751 inches on 18 days; max. in 24 hours was ·506 on the 14th, very different from your great fall.—Yours very truly,

J. W. MOORE.

40, *Fitzwilliam Square West, Dublin, July* 31, 1875.

"SIR,—In connection with the great and wide-spread meteorological disturbances which have occurred of late in these and other countries, the following will not be devoid of interest to some of your readers who may not have seen the unusual phenomenon which I am about to describe.

"About half-past nine o'clock this morning, as I was standing at a window facing the east, in Monkstown, my attention was called by the Rev. T. Power to a number of dark flocculent bodies floating slowly down through the air from a great height, appearing as if falling from a very heavy, dark cloud, which hung over the house. On going to the hall door, a vast number of these bodies were discerned falling on all sides, near and far, to as great a distance as their size permitted them to be seen—over an area whose radius was probably between a quarter and half a mile. Presently, several of these flocks fell close to my feet.

On picking up one, it was found to be a small portion of new hay, of which I enclose a sample. When it fell it was as wet as if a very heavy dew had been deposited on it. The duration of this phenomenon, from the time my attention was first called to it till it had entirely ceased, was about five minutes, but how long it may have been proceeding before this I cannot tell.

"The flocks of hay, from their loose, open structure, made a large appearance for their weight, but the average weight of the larger flocks was probably not more than one or two ounces, and, from that, all sizes were perceptible down to a single blade. There was no rain from the dark cloud overhead, though it had a particularly threatening appearance at the moment of observation. The air was very calm, with a gentle under-current from S.E. The clouds were moving in an upper-current from S.S.W.

"My friend, Dr. J. W. Moore, has kindly supplied me with the following particulars as to the state of the weather in Fitzwilliam Square, at 9 o'clock a.m., half an hour before the above observations were made :—

"'The barometer, corrected and reduced to 32 deg. at sea level, read 30·342in. The air was tolerably warm and dry, the dry-bulb temperature being 60 deg., and the wet-bulb temperature 54·3 deg. ; the dew-point 49·4 deg., and the percentage of humidity 69. A slight S.E. breeze was blowing, while rather heavy cirro-cumuli and cumuli were floating in an upper current from S.S.W.

"'The coincidence of a hot sun and two air currents probably caused the development of a whirlwind some distance to the south of Monkstown. By it the hay was raised into the air, to fall, as already described, over Monkstown and the adjoining district.'—I am, Sir, yours truly, "J. HAWTREY BENSON."

"90, *Lower Baggot Street, July* 27, 1875.

REVIEW.

Handbook for South Africa, including the Cape Colony, the Diamond Fields, and the Trans-Orange Republics, with a new Map and a Gazetteer. S. W. Silver & Co., "Colonies" Office, London, 1875. Cloth 8vo.

THE publishers have evidently resolved to spare neither trouble nor money in making their series of Handbooks upon the various colonies, the most exhaustive works which it is possible to compile. The present work, though still "handy," reaches beyond 500 pages, and really is a worthy successor to Silver's Australia and New Zealand—we could hardly give it higher praise. The only thing which we do not thoroughly like is the author's style, which is not so easy or pictorial as that of the author of *Australia*, indeed we rather wonder that it has been possible for the author to give us so many facts as he has done, and yet to leave us with a hopeless haziness of impression respecting the places which he has described. To any one going to, or interested in, South Africa this book will be of extreme utility as a book of reference, which its good index, good map, and good gazetteer will facilitate; but it certainly cannot rank with Australia for pleasantness of reading.

The chapter on Scenery and Climate is perhaps written the best, and the first two or three pages are quite descriptive, but the usual level is soon reached, although many of the facts recorded are very striking.

JULY 1875.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1860–5	Greatest Fall in 24 hours. Dpth	Date.	Days on which .01 or more fell.	TEMPERATURE. Max. Deg.	Date.	Min. Deg.	Date.	No. of Nights below 32°. In shade	On grass
			inches	inches.	in.								
I.	ENGLAND.	Camden Town	4·64	+ 2·85	1·29	14	17	80·4	28	42·5	13	0	0
II.		Maidstone (Linton Park)	5·60	+ 3·62	1·45	16	17	81·0	29	45·0	13	...	...
,,		Selborne (The Wakes)	6·46	+ 4·26	2·14	14	16	73·5	29	38·5	27	0	0
III.		Hitchen	6·24	+ 4·34	2·06	3	16	71·0	18	42·0	12	0	...
,,		Banbury	5·39	+ 3·33	1·56	20	14	76·0	29	40·0	26	0	...
IV.		Bury St. Edmunds (Culford)	5·29	+ 3·30	1·05	20	14	76·0	29	41·0	25	0	0
V.		Bridport	4·10	+ 1·99	2·70	14	13	75·5	28	36·0	11	...	..
,,		Barnstaple	3·35	+ ·49	1·21	14	15	82·0	30	48·0	26	...	...
,,		Bodmin	3·58	+ ·47	1·36	14	16	74·0	28	46·0	27	0	0
VI.		Cirencester	5·56	+ 3·12	3·11	14	13	...	...	...	...	...	...
,,		Shifnal (Haughton Hall)	5·59	+ 3·42	1·32	20	18	74·0	29	42·0	26	0	0
,,		Tenbury (Orleton)	6·17	+ 3·79	2·15	14	19	77·8	29	39·0	26	0	0
VII.		Leicester (Belmont Villas)	6·54	+ 4·44	2·22	20	16	79·0	18	42·8	13	...	...
,,		Boston	3·82	+ 1·52	·72	14	15	80·0	29	42·0	13	...	...
,,		Grimsby (Killingholme)	4·38	...	·96	17	19	70·0	1, 2	45·0	13	0	...
,,		Derby	...	...	...	...	...	...	...	...	...	...	...
VIII.		Manchester	4·60	+ 1·91	1·06	19	14	82·0	29	41·8	31	...	...
IX.		York	3·05	+ 1·11	·63	15	15	...	...	...	...	...	...
,,		Skipton (Arncliffe)	4·91	+ 1·68	1·80	1	19	77·0	6	35·0	12	0	...
X.		North Shields	5·38	+ 3·57	1·22	19	12	71·0	29	44·0	26	0	..
,,		Borrowdale (Seathwaite)	5·15	— 2·99	·82	8	12	...	...	..	...	...	...
XI.	WALES.	Cardiff (Ely)	8·04	+ 4·89	4·70	14	16	...	...	...	...	...	...
,,		Haverfordwest	5·50	+ 2·20	2·41	14	15	75·5	...	40·0	26	...	...
,,		Rhayader (Cefnfaes)	...	...	.	..	...	...	...	..	...	...	...
,,		Llandudno	3·47	+ 1·18	1·12	14	15	77·0	29	47·2	13	0	0
XII.	SCOTLAND.	Dumfries (Crichton Asylum)	3·00	+ ·75	·59	9	16	78·0	8	40·2	26	0	0
,,		Hawick (Silverbut Hall)	2·54	...	·66	18	11	...	...	...	...	...	...
XIV.		Kilmarnock (Annanhill)	2·15	...	·70	18	9	74·0	22	41·7	16	...	...
XV.		Castle Toward	2·35	— ·79	1·20	19	8	77·0	21	...	...	...	...
XVI.		Leven (Nookton)	2·91	+ ·64	·74	10	16	78·0	7	40·0	26	0	1
,,		Stirling (Deanston)	...	...	...	...	...	..	...	...	..	...	...
,,		Grandtully	1·88	...	·54	19	9	...	...	..	...	...	...
VII.		Braemar	3·53	+ 1·25	·78	23	17	76·0	5	35·2	13	0	1
,,		Aberdeen	3·69	...	..	...	16	71·6	5	38·5	13	0	0
VIII		Loch Broom	4·77	...	·78	22	16	...	...	...	...	...	..
,,		Portree	3·70	— 2·37	·67	29	20	...	...	...	...	...	...
,,		Inverness (Culloden)	3·33	+ ·66	1·35	24	19	74·0	7	39·0	15	0	0
XIX.		Helmsdale	2·26	...	·63	1	11	...	...	...	...	...	...
,,		Sandwick	2·96	+ 1·07	·66	11	13	70·3	21	41·2	14	0	1
XX.	IRELAND.	Caherciveen Darrynane Abbey	2·04	...	·70	12	6	...	...	...	...	...	...
,,		Cork	1·96	...	·60	17	12	...	...	...	...	...	...
,,		Waterford	3·80	+ ·48	1·12	14	12	75·0	7, 8	44·0	27	0	0
,,		Killaloe	...	...	...	...	...	.	...	...	...	..	...
XXI.		Portarlington	2·27	— 1·27	·55	19	20	74·0	28	41·5	16	0	...
,,		Monkstown, Dublin	2·49	+ ·06	...	...	...	...	...	...	...	...	...
XII.		Galway	...	...	...	...	...	...	...	...	...	...	...
,,		Ballyshannon	3·15	...	·50	9, 10	19	...	...	...	...	...	...
XIII		Waringstown	4·29	...	1·10	10	17	81·0	7	38·0	25	0	0
,,		Edenfel (Omagh)	2·39	...	·83	10	16	73·0	28	34·0	25	0	1

+Shows that the fall was above the average; —that it was below it.

METEOROLOGICAL NOTES ON JULY.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

LINTON.—A month memorable for its heavy rainfall, 2·40 in. falling on the 15th and 16th; very little T, except on 3rd and 11th; winds variable, our heaviest rainfall being from N.E.; very little sun, except in the last week, which was dry and fine. A disastrous month to the fruit grower, large quantities being spoiled by the rain, but other crops not so seriously so with us as in other places. Altogether it has been the wettest July for upwards of 20 years, and the 2·40 rain noted above has not been equalled by any two consecutive days during that period.

SELBORNE.—Dense fog on 18th; fog, heavy R and T at 2 p.m. on 19th; heavy R and T at 3 p.m. on 22nd, and on early morning of 23rd. An exceedingly cold, wet, ungenial month; much hay spoiled; hops and corn recovering towards the end of the month; rainfall 4·34 in. in excess of (13 years) average.

HITCHIN.—The wettest and coldest July since we commenced observations in 1849; 2·06in. fell on 3rd, of which 1·57 fell in four hours.

BANBURY.—Little whirlwinds on 25th at 11.45 a.m., wisps of hay carried over the town at a great height (¼ of a mile?) from a rick which was being made in a field ½-a mile out of the town, some of it was carried to Warksworth, two miles E., and some fell in the town.

CULFORD.—T on 3rd, 11th, and 22nd; the rainfall much above the average, and the weather has been cold for the season, the mean. temp. being the same as the month of June, viz., 59°·3; westerly winds prevailed during 25 days, and easterly ones on six.

BRIDPORT.—Heavy floods on 14th and 15th.

BODMIN.—Average bar. during the month, 29·98; mean. temp., 61·°5; rainfall 0·44 in. above the average (26 years).

HAUGHTON HALL, SHIFNALL.—The wettest July (5·59) for 41 years, the nearest approach was in 1853, when 4·06 fell; the temp. of the month was consequently far below the average, especially in the nights, three of which only reached 55°, and only four days were above 70°; the rainfall of 14th and 15th continued for 45 hours, amounting to 1·66; bar. was low, though steady, throughout, highest on 28th, and lowest on 11th; T in distance on 1st, 8th, 22nd, 23rd, and 25th, none of it near, wind varying throughout from all quarters. Swedes dwindling and unhealthy from the R and cold; mangold wurzel flourishing; much hay spoiled, and old hay now above £10 per ton; few butterflies, and, as yet, no wasps.

ORLETON.—Much R on 1st, 2nd, and 3rd, then four fine, dry days, followed by R almost every day till the 24th; the remainder of the month was fine and pleasant; the quantity of R that fell this month (6·17) has only been exceeded three times in July during 45 years, viz., in 1834, 9·225 in, in 1855, 6·530, and in 1861, 6·690 in., in no other July has the quantity registered reached 4·500 in. Faint, distant T, was frequently heard, but there was no TS, and no violent R. The grain crops are sadly beaten down, nevertheless. The temp. of this month was more than 2°·5 below the average.

LEICESTER —More R has fallen in July (6·54) than in any month since I began to register in March, 1860. The last week was fine.

BOSTON.—Temp. of month 3°·3 below the average; great prevalence of Polar winds.

GRIMSBY.—A cold, wet month. In July, 1872, more rain fell in 12 days than has fallen this year in 19, but the heavy rainfall of the last two days of June (1·80) added to this month's rainfall, has made the ground colder and wetter than it was in 1872. We are not subject to floods, but it is feared that the wet has injured the quality of the corn, and endangered the potato crop. TS in early

morning of 18th ; T from 10.30 to 11.30 a.m. on 19th ; dense fog early ; gossamer on 29th—a pretty sure sign of fine weather.

ARNCLIFFE.—1·70 fell between 3 p.m. and 6 p.m. on the 1st during a TS.

NORTH SHIELDS.—T on 2nd ; TS, 11th, 18th, 19th, 20th, and 23rd ; on the 19th 1·22 in. of R fell. ·50 in. fell in half an hour on 2nd.

SEATHWAITE.—Not one day on which 1 in. was measured, ·82 in. on the 8th being the max.

WALES.

HAVERFORDWEST.—Cool throughout, the temp. reached 70° only on five days ; showery and cold 1st to 3rd, and more or less so from 8th to 11th. Great storm from the S.E. with a deluge of R on 14th ; after this, with two or three exceptions, the rest of the month was fine, but remarkably cool. The damage from the storm was much less than expected, neither did the floods correspond with the heavy downpour, little trace remaining after 24 hours.

LLANDUDNO.—A slight TS on 2nd. Notwithstanding a mean temp. 1°·5 below, and a rainfall greatly above the average, there was a large amount of sunshine, and 16 very fine days in the month, which was at the same time characterized by a remarkable absence of sickness. With the exception of the heavy R (1·12 in.) that fell on the 14th, there was nothing unusual in the monthly rainfall.

SCOTLAND.

DUMFRIES.—The fall is below the average, and was pretty equally distributed over the month ; the prevalent winds during the R have been from the N. and E., rather unusual at this season of the year ; there were no heavy falls, and only one TS ; temp. 1°·5 higher than last year.

HAWICK.—A month of beautiful weather ; TS on 1st.

ANNANHILL.—Month generally fine ; TS on 1st, 2nd and 19th ; foliage full and healthy, and pastures good ; harvest prospects promising ; hay, average crop ; cereals looking well ; agricultural reports generally favourable ; potatoes good, no symptom of disease.

CASTLE TOWARD.—The month all that could be desired, the weather so dry that all out-door work is pushed forward ; hay carried in splendid condition ; corn in fine ear ; potatoes capital, and no signs of disease ; currant and gooseberry crop splendid ; apples and pears not quite so large as expected.

BRAEMAR.—T 7 p.m. on 19th ; fine meteor on 21st ; rather a cold, sharp month ; hills partially covered with fresh S on 12th, 13th, and 14th.

LOCHBROOM.—A very fine month ; the R curiously fell in three divisions or plumps, with beautiful weather between.

PORTREE.—A very fine month ; crops all looking very well ; hay harvest almost all secured.

SANDWICK.—A very pleasant month ; temp. at or above 60° on 14 days ; vegetation made rapid progress.

IRELAND.

DARRYNANE.—Very fine month, latter part of the month hot.

BALLYSHANNON.—On the whole a summer-like month, though the frequent showers have interfered with the hay harvest ; potato crop generally good, but not quite free from disease, which generally comes with warm damp weather.

OMAGH.—Weather, though cood, very favourable to the crops. There has not been for many years so fair a prospect of an abundant harvest as this year ; a remarkable depression of temp. on night of 25th, when ice was formed in low damp situations.

SUPPLEMENTARY TABLE OF RAINFALL IN JULY, 1875.

[For the Counties, Divisions, Latitudes, and Longitudes of these Stations, see Met. Mag., Vol. X., p. 28.]

Station.	Total Rain.	Station.	Total Rain.
	in.		in.
Acol	4·09	Stanley, Wakefield	4·08
Hailsham	2·71	Gainford	4·29
Strathfield Turgiss	5·70	Shap	3·27
Addington Manor	4·72	Llanfrechfa	8·44
Oxford	4·70	Castle Malgwyn	3·82
Cambridge	4·81	Heyope	...
Sheering	4·15	Melrose	3·15
Ipswich	4·42	Cessnock, Glasgow	1·26
Diss	3·73	Gruinart	...
Swaffham	7·00	Keith	5·09
Compton Bassett	5·63	Strathconan	4·77
Hessary Tor, Dartmoor	9·07	Springfield, Tain	3·58
Teignmouth	4·15	Skibbereen	0·95
Torrington	3·50	Fermoy	2·16
Trevarrick, St. Austell	3·47	Kilrush	2·41
Taunton	4·18	Kilkenny	4·05
Burnham	4·69	Kilsallaghan	2·86
Cheadle	6·97	Twyford, Athlone	2·11
Ashby de la Zouch	6·84	Ballinasloe	2·19
Coston, Melton Mowbray	7·78	Kylemore	4·23
Bucknall	3·65	Bangor	3·29
Mansfield	4·28	Carrick on Shannon	1·96
Walton, Liverpool	4·33	Warrenpoint	3·20
Broughton-in-Furness	3·71	Bushmills	2·05

A SINGULAR PHENOMENON.

To the Editor of the Meteorological Magazine.

SIR,—On Friday evening, June 25th, between 9 and 10 o'clock, I observed in the E.S.E. very frequent flashes, or rather very narrow streaks, of a pale blue colour keep darting up from the earth towards the heavens, something like those of an Aurora Borealis. The day had been rather dull, hot, and close, and there had been distant thunder. I merely went out to see if I could discern any sheet lightning, but saw the above instead. In the E.S.E. it was rather dark, but overhead and everywhere else it was clear and starry. Can you, or any of your readers, throw any light upon the subject, or give me some information as to what it was, or what may have been the cause of it? I remain, yours faithfully,

CHARLES GAPE.

Rushall Vicarage, Scole, Norfolk, July 15th, 1875.

[Having asked the writer of the above letter certain questions, he has been kind enough to reply as follows.—ED.]

"I have examined local papers and made enquiry, and cannot find there were any displays of fireworks at all. The appearance did not at all resemble fireworks, but seemed much more like some meteoric disturbance.

Rushall Vicarage, Scole, July 29th, 1875."